

DEPARTMENT OF ECOLOGY
Northwest Regional Office

Date: October 23, 2012

To: Karen Keeley, Superfund Project Manager, EPA Region 10

From: Mark Edens, Hydrogeologist 3

Cc: Louise Bardy, TCP Aquatics Unit Supervisor, NWRO

Subject: Slip 4 Early Action Area Long-Term Monitoring and Reporting Plan

The Department of Ecology (Ecology) has reviewed the Draft Long-Term Monitoring and Reporting Plan (LTMRP) for the Slip 4 EAA remedial action dated September 28, 2012 and has the following comments. We believe since there are significant concentrations of PCBs (as much as 14,000 ug/kg dw) left in place beneath the cap, that robust monitoring should be employed to ensure protection of human health and the environment in the area of this cap. Our comments are based on the Lower Duwamish Waterway Feasibility Study monitoring protocol (Appendix K) and sound environmental engineering principals. The following is a list of additional items that Ecology is requesting to be considered in the LTMRP for the Slip 4 EAA remedial action.

1. **Measure new sedimentation on a semi-annual basis.** The plan describes performing a bathymetric/topographic survey every 5 years. In addition to this survey, we recommend measuring the thickness of the newly deposited sediments during the semi-annual surface sampling events (every other year until year 7 and year 10). Determining the accumulation of sediment on the cap will provide information on deposition and erosion in the area, as well as provide for more effective sampling to evaluate recontamination.
2. **Document intertidal habitat during visual inspection.** The plan describes that during the visual inspection field personnel will document intertidal habitat. The plan does not describe how this will be done. The plan should provide how Integral Consulting, Inc. proposes to document the change in intertidal habitat.
3. **Samples collected for analysis should be of recently deposited sediments.** The sediment transport model (STM) for the FS predicts a sedimentation rate of 1 to 2 cm/yr in this area. The plan describes the surface samples will be collected with a van Veen dredge sampler. The plan should describe adjusting the van Veen sampler to collect only sediment deposited on top of the cap. By collecting only recently deposited sediment, the samples will be representative of current contaminant loading conditions and will avoid dilution of the samples with the underlying cap material. Data on current contaminant loading conditions could be used to evaluate the need for more source control actions to prevent having to do additional dredging.

4. **Be specific of the area of the cap being sampled.** The plan describes collection of slope cap and waterway cap samples. The plan should indicate specific portions of the cap that will be sampled. Given that the cap has a variable thickness, which may or may not be armored, this information will help when evaluating subsequent monitoring results.
5. **Locate samples in areas with highest PCB concentrations and collect one additional sample centered between WC-3 and WC-8.** Focus some of the samples in the areas of the highest concentrations of PCBs left behind (e.g., 14,000 ug/kg in SC-04 and 6,900 ug/kg in SC-07 from the FS). Focused sampling at locations with the highest PCB concentrations will provide information on cap integrity in worst-case scenario areas. Also collect one additional sample in the large area between samples WC-3, WC-4, WC-7 and WC-8. Due to the high concentrations of PCBs left in place in this area, the additional sample will provide better evidence toward the effectiveness of the cap at protecting human health and the environment.
6. **The boundary cap samples should be analyzed for the same analytes and the same frequency as the slope cap and waterway cap samples.** The plan describes that the boundary samples will only be collected after the first year post construction. The cap thickness in this area is only 9 inches where the other areas of the cap are 2 feet to 3 feet thick. Monitoring this area is as important as the other portions of the cap. In addition, the boundary samples should be analyzed for the same list of analytes as the other cap samples.
7. **Three core samples should be collected at year 5 and 10.** Core samples were not proposed in this plan. We recommend core samples be collected at three locations in the cap in the areas of the highest concentrations of PCBs beneath the cap. The core samples should be discrete samples collected just above the activated carbon layer within the cap. The core samples should be analyzed for the same chemicals as the other samples. These samples would be collected at year 5 and 10 following construction. These samples would help to determine whether there is migration of contaminants through the cap.
8. **Monitor the pore water in the cap for potential upward migration of contaminants through the activated carbon layer into the cap material.** Due to the high concentrations of contaminants beneath the cap, pore water sampling would provide good evidence toward the effectiveness of activated carbon at sequestering organic contaminants. The pore water should be collected during the collection of the core samples and analyzed for the organic chemicals described in the monitoring plan. These samples would be collected at year 5 and 10 following construction.
9. **The bank samples should be discrete samples.** The plan describes the bank samples (SC-2 and SC-3) as composite samples each from 3 locations. These samples should be discrete samples to avoid dilution of the samples. These samples will be more effective in evaluating recontamination of the area.

We appreciate the opportunity to provide comments on the Slip 4 LTMRP. We feel that these additional steps would provide a better effort toward determining the cap effectiveness in this area. Please contact us with any questions or concerns at 425-649-7070.